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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,786	06/29/2001	Jeng H. Hwang	AM-2090P1.C1/2090.C2	1542

32588 7590 05/06/2004

APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER

OLSEN, ALLAN W

ART UNIT	PAPER NUMBER
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1763

8

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/896,786

Applicant(s)

HWANG ET AL.

Examiner

Allan Olsen

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,8-17 and 19-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,8-17 and 19-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Allowable Subject Matter

Applicant is advised that the Notice of Allowance mailed June 3, 2003 is vacated. If the issue fee has already been paid, applicant may request a refund or request that the fee be credited to a deposit account. However, if the application is allowed, upon receipt of a new Notice of Allowance, applicant may request that the previously submitted issue fee be applied. If the application is later abandoned, applicant may request refund or credit to a specified Deposit Account.

The indicated allowability of this application is withdrawn in view of the newly discovered references to Ishizuka (US 5,531,834), Doi (US 5,690,050), Yokoyama (US 5,515,984) and Yoshida (US 5,753,993). Prosecution on the merits is reopened.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-5 and 10-15 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent 5,531,834 issued to Ishizuka et al. (hereinafter, Ishizuka).

Ishizuka teaches an inductively coupling RF energy through a dielectric ceiling of a plasma apparatus. Ishizuka teaches heating the dielectric ceiling to inhibit the deposition of process residue upon the interior surface of the ceiling. Ishizuka teaches apparatus is used to deposit and etch metal layers such as aluminum. See: col. 7, lines 46-50; col. 17, lines 46-50; col.18, lines 49-55; col. 19, lines 3-4, 45-46; col. 20, lns 3-5.

Claims 1, 3-5, 8, 10-15, 17 and 19-28 are rejected under 35 U.S.C. 102(a) as being anticipated by US Patent 5,690,050 issued to Doi.

Doi teaches a plasma apparatus in which RF energy passes through a domed dielectric ceiling to generate an inductively coupled plasma. Doi teaches heating the domed dielectric ceiling as a means of suppressing the deposition of plasma processing residue, for example, an aluminum residue generated from the etching of an aluminum layer upon a semiconductor substrate. Doi teaches heating the ceiling to a temperature of at least 150°C. Doi teaches that a microwave (ECR) apparatus can also be used. See: Column 3, lines 3-28; column 4, lines 4-6;, 46-53; column 6, lines 54-57; column 7, lines 10-15; column 9, lines 28-35.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 3-5, 8-17 and 19-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,515,984 issued to Yokoyama et al. (hereinafter, Yokoyama) in view of US Patent 5,735,993 issued to Yoshida.

Yokoyama teaches a method of etching a layer of Pt upon a semiconductor wafer. Yokoyama teaches using Cl_2 as a component of the etching gas in an RF or microwave inductively coupled plasma. See: column 2, lines 7-9, 26-29 and 39-41; column 3, lines 13-17; and figure 2.

Yokoyama does not teach heating the dielectric portion of the plasma chamber through which the plasma energy passes.

Yoshida teaches heating the dielectric ceiling of an ICP apparatus to inhibit the deposition of etching products upon the ceiling. See: abstract; column 2, lines 23-26, 32-35, 40-53, 60-63; column 3, line 65- column 4, line 5; column 4, lines 50-57.

It would have been obvious to one skilled in the art to heat the surfaces within Yokoyama's plasma chamber because Yoshida teaches that enhances plasma stability and increases the uniformity of etching results from wafer to wafer. It would have been obvious to one skilled in the art to heat to a temperature of at least 225°C because Yokoyama teaches maintaining a substrate temperature of up to 400°C and Yoshida teaches the temperature of the chamber surfaces should be higher than the temperature of the substrate.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allan Olsen whose telephone number is 571-272-1441. The examiner can normally be reached on M-F 1-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Greg Mills can be reached on 571-272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Allan Olsen". The signature is stylized, with the first name "Allan" written in a cursive-like script and the last name "Olsen" in a more formal, slightly cursive script.

Allan Olsen
Primary Examiner
Art Unit 1763